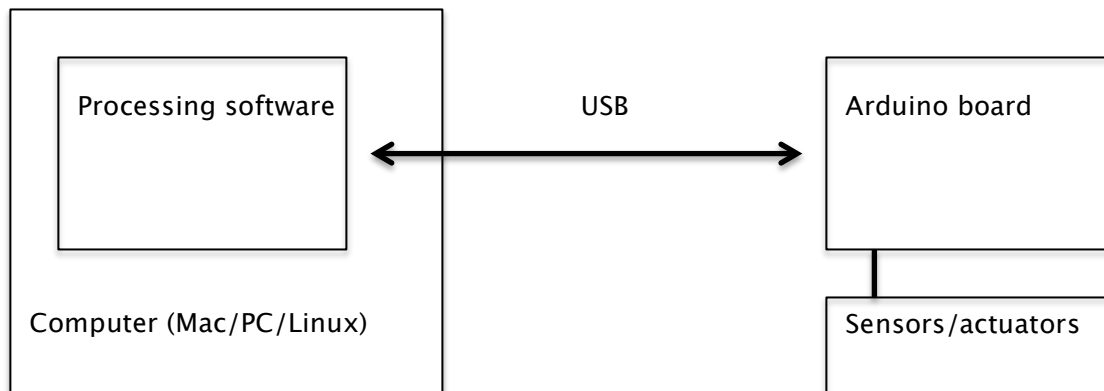


Arduino/Processing Workflow

In this series of technical workshops we are connecting the Arduino USB interface board to the software sketching environment Processing. We are starting with the basics and go through the process step by step, looking at components one after the other before we put them all together.

Here is a system diagram of what we eventually would like to accomplish:



Step by Step Setup

Introduction to the Arduino board:

<http://arduino.cc/>

Install Arduino on your computer at home (it is already installed on the lab computers in Pao B179):

<http://arduino.cc/en/Main/Software> (download software) and
<http://arduino.cc/en/Guide/HomePage> (installation instructions).

Introduction to the Arduino software (allows you to write software and upload it to the Arduino board): <http://arduino.cc/en/Guide/Environment>

Anatomy of an Arduino sketch. Open the Arduino software and choose:

File > Examples > Basics > Bare Minimum

Make Arduino's on-board LED blink:
File > Examples > Basics > Blink

Before uploading the code, choose the correct Arduino board:
Tools > Board > Arduino UNO

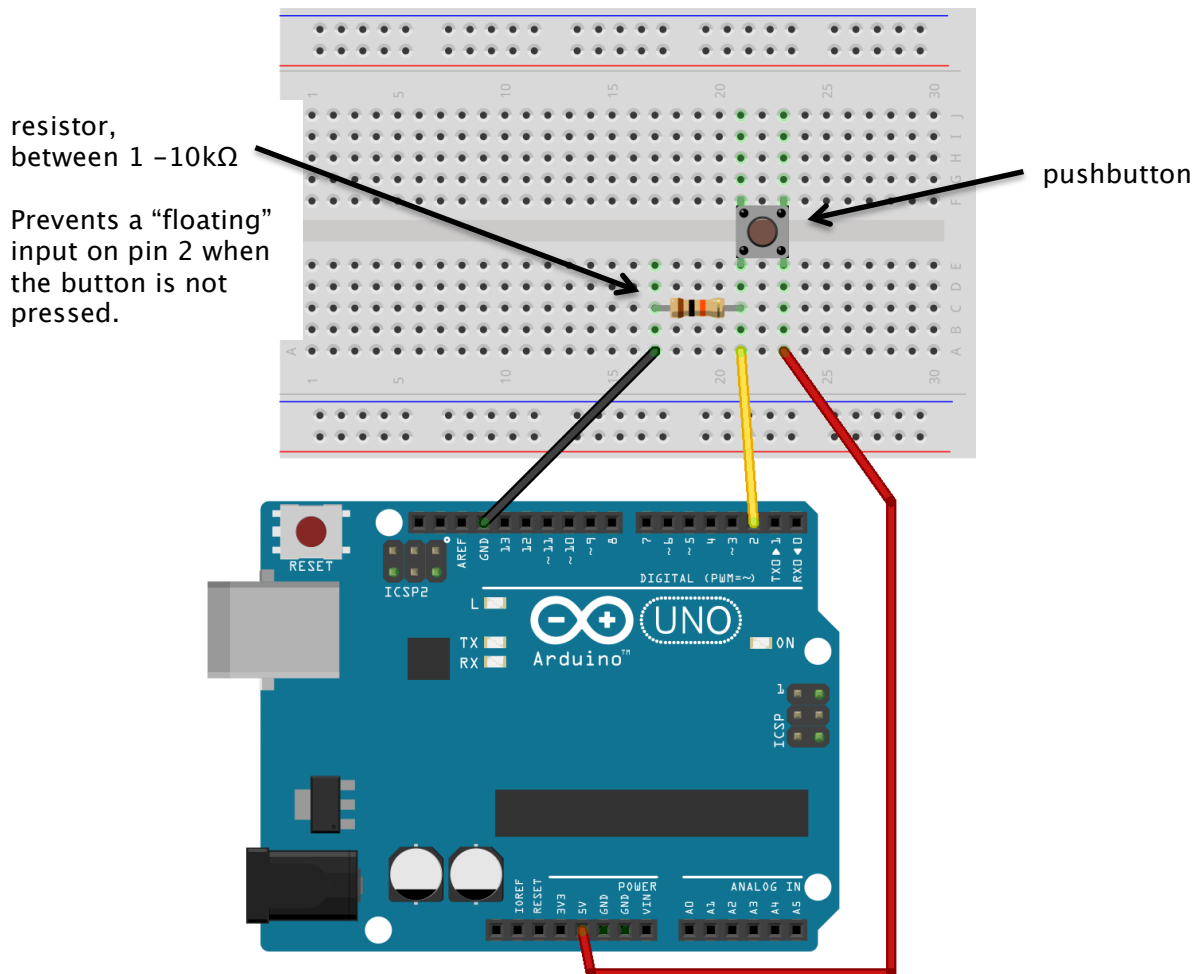
And the correct serial port:
Tools > Serial Port > /dev/cu.USBxxx
(instead of the xxx yours will have some letters and numbers after USB, they are different from computer to computer).

Now hit the "upload" button and observe what happens with your on-board LED, it should blink with an on time of 1 second and an off time of 1 second. Play with the numbers and make it blink faster, more irregularly, with different on and off times, etc...
Connecting Sensors to the Arduino Board

(1) Digital Sensor: micro switch (pushbutton)

We are using Jameco part no. # 155380 (see the datasheet here:
<http://www.jameco.com/Jameco/Products/ProdDS/155380.pdf>)

Let's connect the pushbutton sensor to the Arduino board using the following circuit:



Explanation of breadboard – see page 5 of my workshop “Basics of Electronics” – http://www.cla.purdue.edu/vpa/etb/resources/Electronics_01.pdf

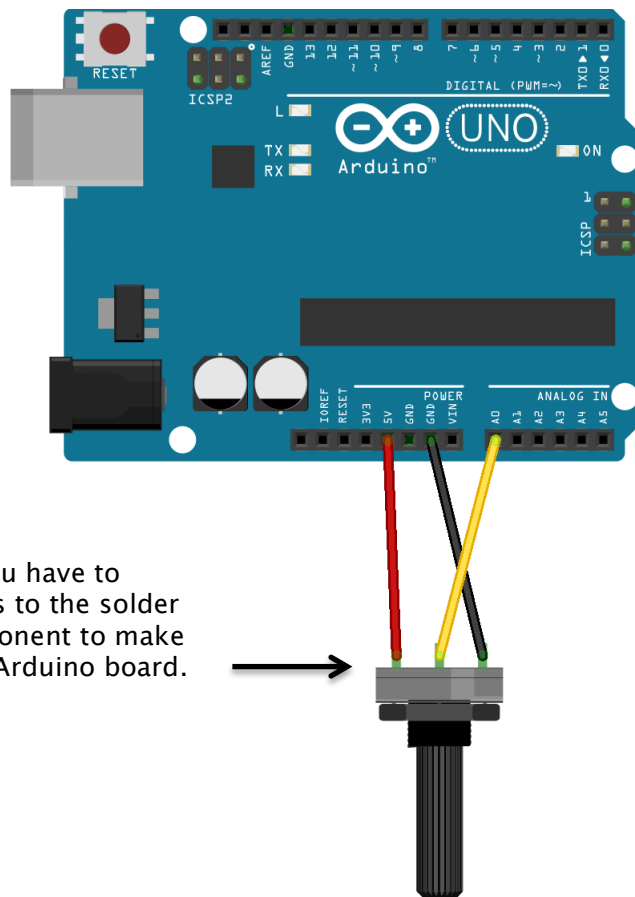
Now load the following code onto the Arduino:
File > Examples > Digital > Button

(2) Analog Sensor: potentiometer

We are using Jameco part no. # 264411 (see the datasheet here: <http://www.jameco.com/Jameco/Products/ProdDS/264411.pdf>)


The potentiometer does not fit the breadboard, so you have to solder some wires to the potentiometer’s solder lugs (or for now just twist them on there).

Let’s connect the sensor to the Arduino board using the following circuit:



Potentiometer, you have to solder some wires to the solder lugs on the component to make it connect to the Arduino board.

Now load the following code onto the Arduino:
File > Examples > Analog > AnalogInOutSerial

Then, open the serial monitor window () and watch the changing numbers as you turn the potentiometer.